

Application No.: 10/723,971

Docket No.: JCLA10372

AMENDMENTS**IN THE CLAIM:**

Claim 1. (currently amended) A vertical routing structure inside a substrate for connecting a first trace line and a second trace line electrically, wherein the substrate has a stack layer, a first patterned circuit layer, and a second patterned circuit layer, the first patterned circuit layer on a first surface of the stack layer forms the first trace line, and the second patterned circuit layer on a second surface of the stack layer forms the second trace line ~~the first trace line and the second trace line are located at a first surface and a corresponding second surface of a stack layer in the substrate,~~ the vertical routing structure comprising:

a conductive rod that passes through the stack layer such that a first surface and a corresponding second surface of the conductive rod are exposed on the first surface and the second surface of the stack layer;

a first bonding pad on the first surface of the conductive rod and formed of the first circuit layer, wherein the first bonding pad is connected to the first trace line and ~~that the~~ transverse sectional area of the first bonding pad is smaller than the transverse sectional area of the first surface of the conductive rod; and

a second bonding pad on the second surface of the conductive rod and formed of the second circuit layer, wherein the second bonding pad is connected to the second trace line.

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Claim 2. (original) The vertical routing structure of claim 1, wherein the transverse sectional area of the second bonding pad is also smaller than the transverse sectional area of the second surface of the conductive rod.

Claim 3. (original) The vertical routing structure of claim 1, wherein the stack layer includes a dielectric layer.

Claim 4. (original) The vertical routing structure of claim 1, wherein the stack layer includes a plurality of dielectric layer and at least a patterned circuit layer, and the circuit layer is positioned between any two neighboring dielectric layers.

Claim 5. (currently amended) The vertical routing structure of claim 4, wherein the a side edge of the conductive rod is electrically connected to the circuit layer.

Claim 6. (currently amended) The vertical routing structure of claim 4, wherein the a side edge of the conductive rod is not electrically connected to the circuit layer.